

WHAT IS CLAIMED IS:

1. A system for performing a data transfer operation, comprising:  
a source device for providing transfer data to a destination device  
5 through a communication path during said data transfer operation; and  
a transfer manager configured to determine a transfer duration for said data transfer operation, said source device providing said transfer duration to a system user for interactively managing  
10 said data transfer operation.
2. The system of claim 1 wherein said source device is implemented to include a digital camera device with at least one of a processor, a display, one or more input/output interfaces, a memory, and a user interface.  
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3. The system of claim 1 wherein said transfer data includes digital image data, said communication path being coupled to an Internet network, said destination device including an image station website that is coupled to said Internet network.  
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4. The system of claim 1 wherein said transfer manager provides transfer options on a user interface of said source device, said system user interactively manipulating said transfer data using said transfer options to thereby change said transfer duration into an acceptable time period under  
25 current transfer conditions.

5. The system of claim 1 wherein said transfer manager includes a bandwidth monitor for determining a current transfer speed for said data transfer operation, a calculation module for determining a data size value corresponding to said transfer data, and for calculating said transfer duration  
5 using said data size value and said current transfer speed, an option manager for controlling transfer options to interactively manipulate said transfer data, a data editor for altering said transfer data, and stored transfer parameters that include said data size value, said current transfer speed, and said transfer duration.
- 10 6. The system of claim 1 wherein said source device includes one or more input/output interfaces that communicate with at least one of a distributed computer network, an Internet network, a host computer, a cellular telephone network, one or more user interfaces, a wireless communications  
15 network, and one or more removable storage media devices.
7. The system of claim 1 wherein said source device includes a user interface presented by a user interface module and a display manager on a local display device, said user interface displaying a visual representation  
20 corresponding to said data transfer operation, said visual representation including a transfer data size field, a transfer speed field, a transfer time field, and one or more transfer option fields for interactive transfer optimizations performed by said system user.
- 25 8. The system of claim 7 wherein said one or more transfer option fields include at least one of a perform transfer option, a cancel transfer option, a postpone transfer option, a change transfer-mode option, and an alter transfer-data option, said alter transfer-data option including at least one of a  
30 reduce data-size option, an increase data-size option, a crop image option, a reduce image-resolution option, an increase image-resolution option, and a compress data option.

9. The system of claim 1 wherein at least one of said system user, a software program, and an electronic entity initially begins said data transfer procedure by issuing a data transfer request to said source device.

5 10. The system of claim 9 wherein a calculation module from said transfer manager responsively determines a data size value corresponding to said transfer data, said data size value being stored in transfer parameters of a local memory device.

10 11. The system of claim 10 wherein a bandwidth monitor from said transfer manager determines a transfer speed value for performing said data transfer procedure under current transfer conditions, said transfer speed value being stored in said transfer parameters of said local memory device.

15 12. The system of claim 11 wherein a transfer speed module of said communication path periodically provides a bandwidth value to said transfer manager to thereby indicate current bandwidth conditions for any data transfer operations through said communication path, said bandwidth monitor responsively converting said bandwidth value into said transfer speed value that is then stored into said transfer parameters in said local  
20 memory device.

13. The system of claim 11 wherein said source device transmits a bandwidth test packet to one of said communication path and said  
25 destination device, said one of said communication path and said destination device responsively returning an acknowledgement of said bandwidth test packet to source device, said bandwidth monitor of said transfer manager responsively calculating said transfer speed value based upon an elapsed test packet transfer time.

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14. The system of claim 11 wherein said calculation module from said transfer module calculates a transfer time value corresponding to said transfer duration, said transfer time value being stored in said transfer parameters of said local memory device.

15. The system of claim 14 wherein said calculation module calculates said transfer time value according to a formula:

$$\text{Transfer Time Value} = \text{Data Size Value} / \text{Transfer Speed Value}$$

where said Transfer Time Value is an amount of time required to complete said data transfer operation in seconds, said Data Size Value is a size of said transfer data in bits, and said Transfer Speed Value is a bandwidth of said communication path for said data transfer operation in bits per second.

16. The system of claim 14 wherein said system user authorizes said source device to perform said data transfer operation whenever said transfer time value is acceptable under said current conditions.

17. The system of claim 14 wherein said system user interactively utilizes one or more transfer options that are presented by said source device on a user interface to thereby optimize said data transfer operation under said current conditions.

18. The system of claim 17 wherein said transfer options include at least one of a perform transfer option, a cancel transfer option, a postpone transfer option, a change transfer-mode option, and an alter transfer-data option, said alter transfer-data option including at least one of a reduce data-size option, an increase data-size option, a crop image option, a reduce image-resolution option, an increase image-resolution option, and a compress data option.

19. The system of claim 17 wherein said transfer manager repeatedly recalculates and displays said transfer parameters on said user interface to thereby allow said system user to optimize said data transfer operation under said current conditions.

20. The system of claim 1 wherein said system user specifies an optimal value for said transfer duration under current conditions, said transfer manager automatically altering said transfer data using available transfer options to thereby permit said source device to perform said data transfer operation using said optimal value for said transfer duration.

21. A method for performing a data transfer operation, comprising the steps of:  
transferring data from a source device to a destination device through a communication path during said data transfer operation;  
determining a transfer duration for said data transfer operation by using a transfer manager; and  
providing said transfer duration to a system user for interactively managing said data transfer operation.

22. The method of claim 21 wherein said source device is implemented to include a digital camera device with at least one of a processor, a display, one or more input/output interfaces, a memory, and a user interface.

23. The method of claim 21 wherein said transfer data includes digital image data, said communication path being coupled to an Internet network, said destination device including an image station website that is coupled to said Internet network.

24. The method of claim 21 wherein said transfer manager provides transfer options on a user interface of said source device, said system user interactively manipulating said transfer data using said transfer options to thereby change said transfer duration into an acceptable time period under  
5 current transfer conditions.

25. The method of claim 21 wherein said transfer manager includes a bandwidth monitor for determining a current transfer speed for said data transfer operation, a calculation module for determining a data size value  
10 corresponding to said transfer data, and for calculating said transfer duration using said data size value and said current transfer speed, an option manager for controlling transfer options to interactively manipulate said transfer data, a data editor for altering said transfer data, and stored transfer parameters that include said data size value, said current transfer speed, and  
15 said transfer duration.

26. The method of claim 21 wherein said source device includes one or more input/output interfaces that communicate with at least one of a distributed computer network, an Internet network, a host computer, a  
20 cellular telephone network, one or more user interfaces, a wireless communications network, and one or more removable storage media devices.

27. The method of claim 21 wherein said source device includes a user interface presented by a user interface module and a display manager on a  
25 local display device, said user interface displaying a visual representation corresponding to said data transfer operation, said visual representation including a transfer data size field, a transfer speed field, a transfer time field, and one or more transfer option fields for interactive transfer optimizations performed by said system user.

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28. The method of claim 27 wherein said one or more transfer option fields include at least one of a perform transfer option, a cancel transfer option, a postpone transfer option, a change transfer-mode option, and an alter transfer-data option, said alter transfer-data option including at least one of a  
5 reduce data-size option, an increase data-size option, a crop image option, a reduce image-resolution option, an increase image-resolution option, and a compress data option.

29. The method of claim 21 wherein at least one of said system user, a  
10 software program, and an electronic entity initially begins said data transfer procedure by issuing a data transfer request to said source device.

30. The method of claim 29 wherein a calculation module from said transfer manager responsively determines a data size value corresponding to  
15 said transfer data, said data size value being stored in transfer parameters of a local memory device.

31. The method of claim 30 wherein a bandwidth monitor from said transfer manager determines a transfer speed value for performing said data  
20 transfer procedure under current transfer conditions, said transfer speed value being stored in said transfer parameters of said local memory device.

32. The method of claim 31 wherein a transfer speed module of said communication path periodically provides a bandwidth value to said transfer  
25 manager to thereby indicate current bandwidth conditions for any data transfer operations through said communication path, said bandwidth monitor responsively converting said bandwidth value into said transfer speed value that is then stored into said transfer parameters in said local memory device.

33. The method of claim 31 wherein said source device transmits a bandwidth test packet to one of said communication path and said destination device, said one of said communication path and said destination device responsively returning an acknowledgement of said bandwidth test packet to source device, said bandwidth monitor of said transfer manager responsively calculating said transfer speed value based upon an elapsed test packet transfer time.

34. The method of claim 31 wherein said calculation module from said transfer module calculates a transfer time value corresponding to said transfer duration, said transfer time value being stored in said transfer parameters of said local memory device.

35. The method of claim 34 wherein said calculation module calculates said transfer time value according to a formula:

$$\text{Transfer Time Value} = \text{Data Size Value} / \text{Transfer Speed Value}$$

where said Transfer Time Value is an amount of time required to complete said data transfer operation in seconds, said Data Size Value is a size of said transfer data in bits, and said Transfer Speed Value is a bandwidth of said communication path for said data transfer operation in bits per second.

36. The method of claim 34 wherein said system user authorizes said source device to perform said data transfer operation whenever said transfer time value is acceptable under said current conditions.

37. The method of claim 34 wherein said system user interactively utilizes one or more transfer options that are presented by said source device on a user interface to thereby optimize said data transfer operation under said current conditions.



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38. The method of claim 37 wherein said transfer options include at least one of a perform transfer option, a cancel transfer option, a postpone transfer option, a change transfer-mode option, and an alter transfer-data option, said alter transfer-data option including at least one of a reduce data-size option,  
5 an increase data-size option, a crop image option, a reduce image-resolution option, an increase image-resolution option, and a compress data option.

39. The method of claim 37 wherein said transfer manager repeatedly recalculates and displays said transfer parameters on said user interface to  
10 thereby allow said system user to optimize said data transfer operation under said current conditions.

40. The method of claim 21 wherein said system user specifies an optimal value for said transfer duration under current conditions, said transfer  
15 manager automatically altering said transfer data using available transfer options to thereby permit said source device to perform said data transfer operation using said optimal value for said transfer duration.

41. The method of claim 21 further comprising the step of entering a hint  
20 mode wherein said transfer manager provides one or more transfer options for performing said data transfer operation, and wherein a hint subroutine responsively generates at least one of a transfer recommendation and a transfer explanation for said data transfer operation, said hint subroutine being activated by at least one of a system user action and an automatic  
25 initiation event from said source device.

42. A computer-readable medium comprising program instructions for transferring data by performing the steps of:

transferring data from a source device to a destination device through a communication path during said data transfer operation;

5 determining a transfer duration for said data transfer operation by using a transfer manager; and

providing said transfer duration to a system user for interactively managing said data transfer operation.

10 43. A system for performing a data transfer operation, comprising:

means for transferring data from a source device to a destination device through a communication path during said data transfer operation;

15 means for determining a transfer duration for said data transfer operation; and

means for providing said transfer duration to a system user for interactively managing said data transfer operation.